

---

**Hematopoietic stem cell-independent hematopoiesis and the origins of innate-like B lymphocytes.**

**Journal:** Development

**Publication Year:** 2019

**Authors:** Eliver Ghosn, Momoko Yoshimoto, Hiromitsu Nakauchi, Irving L Weissman, Leonore A Herzenberg

**PubMed link:** 31371526

**Funding Grants:** Generation of functional cells and organs from iPSCs , Novel Rejuvenated T Cell Immunotherapy for Lung Cancer, Optimizing self-renewal signaling kinetics to stabilize ex vivo hematopoietic stem cell expansion

**Public Summary:**

In this review, we discuss the biology of blood formation, in particular our current knowledge of how certain blood cells form independently of blood stem cells.

**Scientific Abstract:**

The current paradigm that a single long-term hematopoietic stem cell can regenerate all components of the mammalian immune system has been challenged by recent findings in mice. These findings show that adult tissue-resident macrophages and innate-like lymphocytes develop early in fetal hematopoiesis from progenitors that emerge prior to, and apparently independently of, conventional long-term hematopoietic stem cells. Here, we discuss these recent findings, which show that an early and distinct wave of hematopoiesis occurs for all major hematopoietic lineages. These data provide evidence that fetal hematopoietic progenitors not derived from the bona fide long-term hematopoietic stem cells give rise to tissue-resident immune cells that persist throughout adulthood. We also discuss recent insights into B lymphocyte development and attempt to synthesize seemingly contradictory recent findings on the origins of innate-like B-1a lymphocytes during fetal hematopoiesis.

---

**Source URL:** <https://www.cirm.ca.gov/about-cirm/publications/hematopoietic-stem-cell-independent-hematopoiesis-and-origins-innate-b>